```
(FILE 'USPAT' ENTERED AT 15:21:25 ON 20 SEP 1999)
          ACT PROTECTDATA/L
          ---------
L1            QUE   PLU=ON  DATA (2A) PROTECT?
L2            QUE   PLU=ON  UTILIZ? OR USE? OR USING
L3            QUE   PLU=ON  ALLOW? OR PERMI?
L4            QUE   PLU=ON  JUDG? OR COMPAR?
L5            QUE   PLU=ON  COPYRIGHT? OR COPY OR COPYING OR DUPLICAT?
L6  (    398)SEA FILE=USPAT PLU=ON  L1 (P) L2 (P) L3
L7            QUE   PLU=ON  FORBID? OR PROHIBIT?
L8  (     65)SEA FILE=USPAT PLU=ON  L6 AND L7
L9            QUE   PLU=ON  APPEND? OR ATTACH? OR ADD?
L10           QUE   PLU=ON  APPEND? OR ATTACH? OR ADDING? OR ADDED OR AD
L11 (     55)SEA FILE=USPAT PLU=ON  L8 AND L10   scanned
L12           QUE   PLU=ON  STOR? OR SAV?
L13 (     55)SEA FILE=USPAT PLU=ON  L12 AND L11
L14           QUE   PLU=ON  INPUT (P) DATA
L15           QUE   PLU=ON  ENCRYPT?
L16 (      1)SEA FILE=USPAT PLU=ON  5392351/PN    considered
L17 (      0)SEA FILE=USPAT PLU=ON  L16 AND (L15 (P) L14)
L18           QUE   PLU=ON  DIFFER?
L19 (      1)SEA FILE=USPAT PLU=ON  L16 AND (L18 (P) DATA)
L20 (      5)SEA FILE=USPAT PLU=ON  5832083/PN OR 5796824/PN OR 5761651
/PN
L21 (      5)SEA FILE=USPAT PLU=ON  L20 AND (L18 (P) DATA)   6/11/97
L22 (    304)SEA FILE=USPAT PLU=ON  L6 AND (L18 (P) DATA) AND FY<1997
L23           QUE   PLU=ON  AFTER?
L24 (     71)SEA FILE=USPAT PLU=ON  L22 AND (L18 (P) DATA (P) L23)
L25 (      0)SEA FILE=USPAT PLU=ON  L24 AND 705/CCLS
L26 (      0)SEA FILE=USPAT PLU=ON  L24 AND 705/CLAS
L27 (      3)SEA FILE=USPAT PLU=ON  L24 AND 395/CLAS
L28 (      1)SEA FILE=USPAT PLU=ON  5864683/PN AND (L23 (P) L18 (P) DAT
A)
L29 (      1)SEA FILE=USPAT PLU=ON  5862325/PN AND (L23 (P) L18 (P) DAT
A)
L30 (      1)SEA FILE=USPAT PLU=ON  5276876/PN AND (L23 (P) L18 (P) DAT
A)
L31 (     14)SEA FILE=USPAT PLU=ON  L24 AND 380/CLAS   scanned
L32 (      1)SEA FILE=USPAT PLU=ON  L31 AND (L23 (5A) DATA (5A) L18)
L33           QUE   PLU=ON  UPDAT? OR PASTE? OR ADD?
L34           QUE   PLU=ON  L33 (3A) DATA
L35           QUE   PLU=ON  UPDAT? OR PASTE? OR ADDED OR ADDING# OR ADDS
L36 (      0)SEA FILE=USPAT PLU=ON  L20 AND (L35 (3A) DATA)
L37 (      6)SEA FILE=USPAT PLU=ON  5392351/PN OR 5761651/PN OR 5832083
/PN                                                     considered
L38 (      1)SEA FILE=USPAT PLU=ON  L37 AND (L12 (P) L14)
L39           QUE   PLU=ON  L10 OR L33
L40           QUE   PLU=ON  PREPAR? OR GENERAT? OR DISPLAY? OR APPEND?
L41           QUE   PLU=ON  L39 OR L40
              ---------
L42        1 S 5761651/PN   considered
L43        1 S 5832083/PN
L44        0 S L16 AND (STOR? DATA)
L45        1 S L16 AND (STOR? (P) DATA)
L46          QUE PREPAR? OR GENERAT? OR APPEND? OR WORK? OR DISPLAY?
L47          QUE INPUT? (P) DATA
L48        0 S L16 AND (L47 (P) L46)
L49          QUE INPUT?
L50        1 S L16 AND (L46 (P) L49)
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L51        0 S L1   AND L4
L52          QUE    END? OR ADD? OR JOIN?
L53          QUE    A OR INFORMATION#
L54          QUE  APPEND? OR ADDING# OR ADDED OR JOINING OR JOINED
L55        0 S L16 AND (L54 (P) L53)
L56        0 S L16 AND L54
L57        1 S L42 AND (L54 (P) L53)        considered
             SAVE -L57 PROTECTDATA/L
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=> act protectdata/1

L1              QUE   PLU=ON   DATA (2A) PROTECT?
L2              QUE   PLU=ON   UTILIZ? OR USE? OR USING
L3              QUE   PLU=ON   ALLOW? OR PERMI?
L4              QUE   PLU=ON   JUDG? OR COMPAR?
L5              QUE   PLU=ON   COPYRIGHT? OR COPY OR COPYING OR DUPLICAT?
L6    (    398) SEA   FILE=USPAT PLU=ON   L1 (P) L2 (P) L3
L7              QUE   PLU=ON   FORBID? OR PROHIBIT?
L8    (    65) SEA   FILE=USPAT PLU=ON   L6 AND L7
L9              QUE   PLU=ON   APPEND? OR ATTACH? OR ADD?
L10             QUE   PLU=ON   APPEND? OR ATTACH? OR ADDING? OR ADDED OR AD
                DS
L11   (    55) SEA   FILE=USPAT PLU=ON   L8 AND L10
L12             QUE   PLU=ON   STOR? OR SAV?
L13   (    55) SEA   FILE=USPAT PLU=ON   L12 AND L11    (scanned images)
L14             QUE   PLU=ON   INPUT (P) DATA
L15             QUE   PLU=ON   ENCRYPT?
L16   (    1) SEA   FILE=USPAT PLU=ON   5392351/PN
L17   (    0) SEA   FILE=USPAT PLU=ON   L16 AND (L15 (P) L14)
L18             QUE   PLU=ON   DIFFER?
L19   (    1) SEA   FILE=USPAT PLU=ON   L16 AND (L18 (P) DATA)   (considerred)
L20   (    5) SEA   FILE=USPAT PLU=ON   5832083/PN OR 5796824/PN OR 5761651
/PN
L21   (    5) SEA   FILE=USPAT PLU=ON   L20 AND (L18 (P) DATA)
L22   (    304) SEA   FILE=USPAT PLU=ON   L6 AND (L18 (P) DATA) AND FY<1997
L23             QUE   PLU=ON   AFTER?
L24   (    71) SEA   FILE=USPAT PLU=ON   L22 AND (L18 (P) DATA (P) L23)
L25   (    0) SEA   FILE=USPAT PLU=ON   L24 AND 705/CCLS
L26   (    0) SEA   FILE=USPAT PLU=ON   L24 AND 705/CLAS
L27   (    3) SEA   FILE=USPAT PLU=ON   L24 AND 395/CLAS
L28   (    1) SEA   FILE=USPAT PLU=ON   5864683/PN AND (L23 (P) L18 (P) DAT
A)
L29   (    1) SEA   FILE=USPAT PLU=ON   5862325/PN AND (L23 (P) L18 (P) DAT
A)
L30   (    1) SEA   FILE=USPAT PLU=ON   5276876/PN AND (L23 (P) L18 (P) DAT
A)
L31   (    14) SEA   FILE=USPAT PLU=ON   L24 AND 380/CLAS   (review abstracts)
L32   (    1) SEA   FILE=USPAT PLU=ON   L31 AND (L23 (5A) DATA (5A) L18)
L33             QUE   PLU=ON   UPDAT? OR PASTE? OR ADD?
L34             QUE   PLU=ON   L33 (3A) DATA
L35             QUE   PLU=ON   UPDAT? OR PASTE? OR ADDED OR ADDING# OR ADDS
                OR ADD
L36   (    0) SEA   FILE=USPAT PLU=ON   L20 AND (L35 (3A) DATA)

=> s 5392351/pn or 5761651/pn or 5832083/pn or 5408351/pn or 5555304/pn or
5796824/pn

                1 5392351/PN
                1 5761651/PN
                1 5832083/PN
                1 5408351/PN
                1 5555304/PN
                1 5796824/PN
L37             6 5392351/PN OR 5761651/PN OR 5832083/PN OR 5408351/PN OR 555
530
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US PAT NO: 5,408,531 [IMAGE AVAILABLE]
DATE FILED: Sep. 9, 1992
US-CL-CURRENT: 380/3; 235/379, 380; 380/4, 9, 23, 24,
                49, 50, 54; 714/752, 755, 756

SUMMARY:

BSUM(11)

In the aforesaid example, generally, a secret number input by a **user**
when the optical card recording/reproducing apparatus is **used**, and a
secret number previously recorded on the optical card are read and
compared. When they coincide, it is **allowed** to record/reproduce a
data. When they do not coincide, it is prohibited to record/reproduce a
data. Thus, an apparatus which includes the process of comparing such
secret numbers with each other has an effect for **protecting** a
data. However, an apparatus which does not include the process of
comparing cannot attempt to **protect** a **data**, so that the data can
be recorded/reproduced without constraints. Even if a data was encrypted,
the feature that the data.   .   .

DETDESC:

DETD(17)

FIG. 6 shows an example of the case in which a **data** of the
information byte has high randomness as an example of the process by the
first **data** converting circuit 4. If the rotation is performed within
the information byte, there is a high probability in which each **data**
of the information byte is **different** from the original **data**.
Therefore, the aforesaid formula (2) can be made invalid in each code
word. Also, because the condition making the formula.   .   . errors
cannot be corrected in the decoding circuit 9 at reproducing in an
optical card recording/reproducing apparatus excluding the second
data converting circuit 8 or an apparatus decoding by a **different**
rule, so that the **data** cannot be reproduced correctly.

DETDESC:

DETD(48)

In the aforesaid first embodiment, a rule for **data** conversion by
rearrangement of a **data**, such as **data** rotation is provided in
each optical card recording/reproducing apparatus 1. It can be also
operated as follows. That is, a plurality of **different data**
converting means are provided in the optical card recording/reproducing
apparatus and a plurality of **data** converting modes within the optical
card recording/reproducing apparatus are specified by providing the mode
for designating a converting rule of the **data** converting means in a
recording/reproducing command from the host computer, so that the
data cannot be reproduced if a designated mode from the host computer
is **different** even if the optical card recording/reproducing apparatus
is identical at both cases of recording time and reproducing time, and
that the **data** can be protected as in the first embodiment.

DETDESC:

DETD(54)

In the case in which the selection of the **data** conver ng means
transmitted to the optical card recording/reproducing apparatus 21 at
recording is **differen** from the selection at reproduci the
converting mode at the second **data** converting means 23 rresponding
to the **data** converting mode at the first **data** converting means 22
is not selected correctly. Therefore, the **data** arrangement or a bit
value is not correctly reverted. Then, errors cannot be corrected and the
data cannot be read.

DETDESC:

DETD(55)

 The optical card recording/reproducing apparatus 21 is formed as
mentioned above can actualize **different** secret-coding without
changing the structure of the apparatus 21 by an alteration of a software
on the side of the. . . the software of the host computer within an
application system is made to be the same, the compatibility of a
data for **different** systems is lost and the **data** can be
protected between applications.

DETDESC:

DETD(57)

 In the aforesaid first and second embodiments, a rule of **data**
conversion is set at every host computer and every optical card
recording/reproducing apparatus; however, a rule of **different**
data conversion can be set in each optical card. This will be
explained concretely on the basis of FIG. 11 as follows. FIG. 11 shows
the structure of a controller which controls the recording and
reproducing operations of the **data** from the optical card.

DETDESC:

DETD(63)

 If the secret number which is **different** from that of the recording
time is stored, the conversion irrespective of the recording time is
executed. Accordingly, the EDAC circuit 37 is impossible to correct
errors. In this case, **data** transmission from the EDAC circuit 37 to
the first buffer 36 is prohibited. If it is possible to correct errors in
the **data** transmitted from the **data** converting circuit 38 to the
EDAC circuit 37, the **data** is temporarily stored in the first buffer
36 and transmitted to the host computer 33 by the first DMA circuit 34.
When the **data** is transmitted, the host computer 33 displays a
data read by, for example, displaying means 47.

DETDESC:

DETD(68)

 Thus, if the rotation of a bit unit is applied to the information byte,
almost all bytes having **different data** indicating the byte before
and **after** the rotation. Therefore, in the case (except that an
inverse process is executed for the **data** conversion by this
rotation), if the **data** is reproduced, errors are generated exceeding
a correcting ability of an error correcting code. Accordingly, the error
cannot be corrected, so that a **data** cannot be read.

DETDESC:

DETD(70)

 In . . . interchanged. In this operation, errors are generated

exceeding the correct: ability of the error correcti code at the
reproduction because data representing bytes are **differ**e**ct**
between before and af▮ the replacement in most of the▮ytes.
Accordingly, the errors cannot be corrected, so that **da**▮ cannot be
read.

DETDESC:

DETD(71)

FIG. . . . every byte unit in each divided unit. FIG. 14a shows a
case before the rotation. FIG. 14b shows a state **after** the rotation
in the right direction of one byte in every divided range in which
information bytes are divided into groups of three bytes. In this
operation, when a **data** is reproduced, the errors are generated
exceeding the correcting ability of the error correcting code because the
data representing bytes are **different** before and **after** the
rotation. Accordingly, errors cannot be corrected and the **data** cannot
be read.

DETDESC:

DETD(76)

That is, the **data** of one byte (eight bits) output from the coding
circuit 2 is supplied to the first **data** converting circuit 4. The
first **data** converting circuit 4 has inverts 81 and 81 which invert
the second bit and sixth bit from LSB for a **data** of one byte to be
input. Also, the first **data** converting circuit 4 has the structure
for feeding the **data** as it is to the recording means 5 without
inverting the other bits. In this way, such simple structure is able to
actualize **data** conversion. Also, because the **data** of all bytes
are **different** from the original **data**, the code words executed by
such conversion become impossible to correct errors, so that a **data**
cannot be read as in the aforesaid examples.

=> d

1. 5,408,531, Apr. 18, 1995, Information recording/reproducing apparatus
for converting and processing data exceeding error correction ability at
recording; Yoshio Nakajima, **380/3**; 235/379, 380; **380/4, 9,**